Case Report
JCAM

Bilateral cortical blindness after recurrent ischemic stroke

Murat Uysal[1], Serhat Karaman[2]
[1]Department of Anatomy, [2]Department of Emergency Medicine, Gaziosmanpasa University, Faculty of Medicine, Tokat, Turkey

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Abstract

Cerebrovascular diseases, which are the third most common cause of death after cardiovascular diseases and cancer, represents an enormous public health burden. Visual loss caused by geniculocalcarine visual pathways are named cortical blindness. The causes of cortical blindness include head trauma, episodes of hypoglycemia or hypotension, cardiac arrest, stroke, tumor and occipital lobe epilepsy. We present a case of right occipital cortex with encephalomalacic change after a previous ischemic stroke and total cortical blindness with a newly developing ischemic stroke in the left occipital cortex.

Keywords

Cerebrovascular Disease; Bilateral Cortical Blindness; Stroke

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Corresponding Author: Serhat Karaman, Department of Emergency Medicine, Gaziosmanpasa University, Tokat, Turkey.
T.: +90 3562149444 F.: +90 3562133179 E-Mail: drserhatkaraman@hotmail.com

Introduction

Acute bilateral blindness is a clinical condition which is rare and usually results from cortical causes. It is very difficult to put the diagnosis of the condition for a physician. Acute bilateral blindness can be an early sign of a disease that might be life-threatening [1]. Visual loss due to geniculocalcarine visual pathways is named cortical or cerebellar blindness. Total cortical blindness is observed much less than partial cortical blindness [2]. Acute bilateral blindness might manifest itself in life-threatening conditions such as pulmonary embolism, encephalitis, and methanol toxicity. Besides the rare occurrence of acute bilateral blindness, urgent diagnosis and treatment of the condition should be done in a short time [3]. We wanted to share the case applied to the emergency department with total bilateral blindness after the recurrent ischemic stroke involving occipital lobes only.

Case report

A 56-year-old female patient was admitted to our emergency department with a complaint of newly-emerging complete loss of vision. We have learned that the patient had an ischemic cerebrovascular disease a year ago. There was no symptom of lateralization on the physical examination. Blood pressure was 140/80 mmHg, and pulse was 86/min. There was atrial fibrillation observed on the electrocardiography (ECG). On the patient's visual examination, it was seen that there was a complete loss of vision and the funduscopy was normal (Figure 1). Computed tomography (CT) of the patient revealed an encephalomalacia in the right occipital lobe and reduction in density that may suggest acute infarction in the left occipital lobe (Figure 2). On the other hand, in the diffusional magnetic resonance imaging (MRI), a diffusional restriction was seen in the medial segment of left occipital lobe compatible with acute infarction (Figure 3). Encephalomalacia was noticed in the right occipital lobe in the brain CT scan taken after the first ischemic stroke a year earlier found in the patient's archival records (Figure 4). When the images were examined, it was found that total bilateral blindness developed because of the effect of the first ischemic stroke on the right visual field and the newly developed ischemic stroke on the left visual field. We have started antiaggregant and aspirin treatment and hospitalized the patient. Bilateral carotid Doppler ultrasonography (USG) was done one day after hospitalization showed millimetric calcific plaques that did not lead to internal carotid artery (ICA) flow velocity from the right common carotid artery (CCA) at the bifurcation level. Bilateral CCA, ICA and external carotid artery (ECA) flow patterns and velocities were monitored as normal. Bilateral vertebral arteries in vertebral artery Doppler USG examination were monitored as clear, and it has been found that the flow rates are decreasing on both sides, the decrease is even more on the left. The right flow volume was 70 ml/min, left was 40 ml/min, and the total was 110 ml/min, and they were observed to decrease.

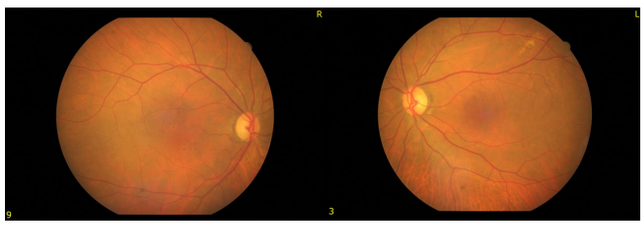

Figure 1. Fundus photography of the right and left eye showing a normal retinal presentation.

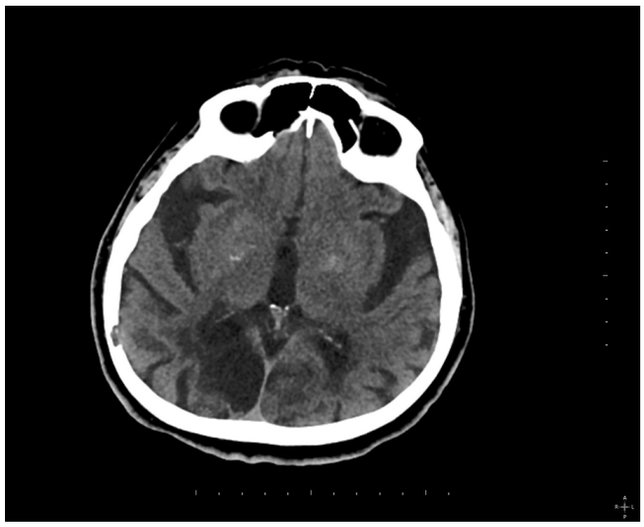

Figure 2. Encephalomalacic hypodense area in the right occipital lobe, decrease in density in left occipital lobe, which may suggest acute infarction

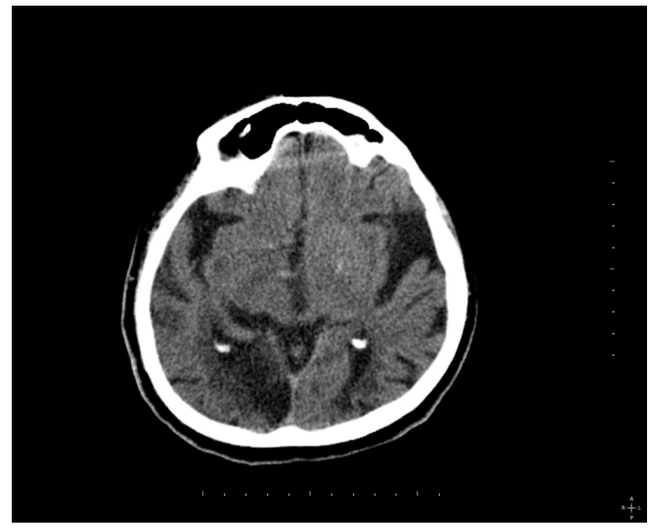

Figure 3. Hypodense area compatible with infarct in right occipital lobe in computerized brain tomography taken a year ago

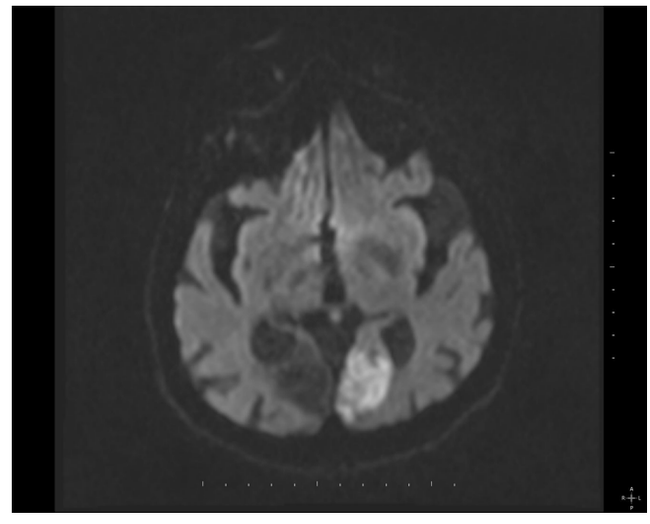

Figure 4. In diffusion magnetic resonance imaging, restriction of diffusion in the medial part of the left occipital lobe in accordance with acute infarction

Discussion

Systemic diseases, infections, syncope, arrhythmia, intoxications and cerebrovascular conditions should be carefully reviewed in the case of patients who had been referred to emergency services with similar complaints. We found related cases with cortical loss of vision, which occurred after few and different etiologies in the literature review. Khan et al. [4] reported bilateral visual loss resulted from systemic lupus erythematosus in a young female patient. In another case report, in an 84-year-old female patient with cardiomegaly and arrhythmia pulmonary embolism was detected. Her cranial imaging was interpreted as normal and acute bilateral blindness was detected in the case [1]. Also, there is a case of cortical visual loss in a 42-year-old female patient which is found to be due to reversible posterior leukoencephalopathy syndrome [5]. In the literature, cortical blindness and transient cortical blindness have also been reported which developed after coronary angiography intervention or cardiopulmonary resuscitation [6,7]. What distinguished our case from other cases is that the onset of the stroke affected the right visual field a year ago and newly developed stroke affected the left visual field which resulted in cortical bilateral total vision loss.

A detailed eye examination should be performed after reviewing the vital signs and stabilizing the conditions of patients referred with a visual loss [1]. If pupillary light responses and funduscopy are normal, ocular etiologies are effectively ruled out. Conversely, if pupillary reflexes and/or funduscopy are abnormal, an ocular-related cause of blindness is present [8]. Cranial imaging was requested when no pathology was detected other than the visual loss in our detailed eye examination.

Emergency physicians should focus on the identification of life-threatening diseases by reviewing the ocular, psychogenic, and cortical etiologies in patients with vision loss. The distinction of ocular, cortical and functional causes of visual loss is of therapeutic importance. Early diagnosis and appropriate consultation will provide a good chance for the patient to see.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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